The Chlorophyll Bands of Spirogyra.—In some cases it is desirable to count the number of chlorophyll bands in each cell of a filament of *Spirogyra*. When the band is single or double there is no difficulty, but when the filaments are crowded with chlorophyll the task is not so easy. While studying *Spirogyra* Mr. O. F. Dragoo, of the class of '86, Purdue University, devised a novel and certainly very ingenious plan, which may be explained by reference to the accompanying diagram.

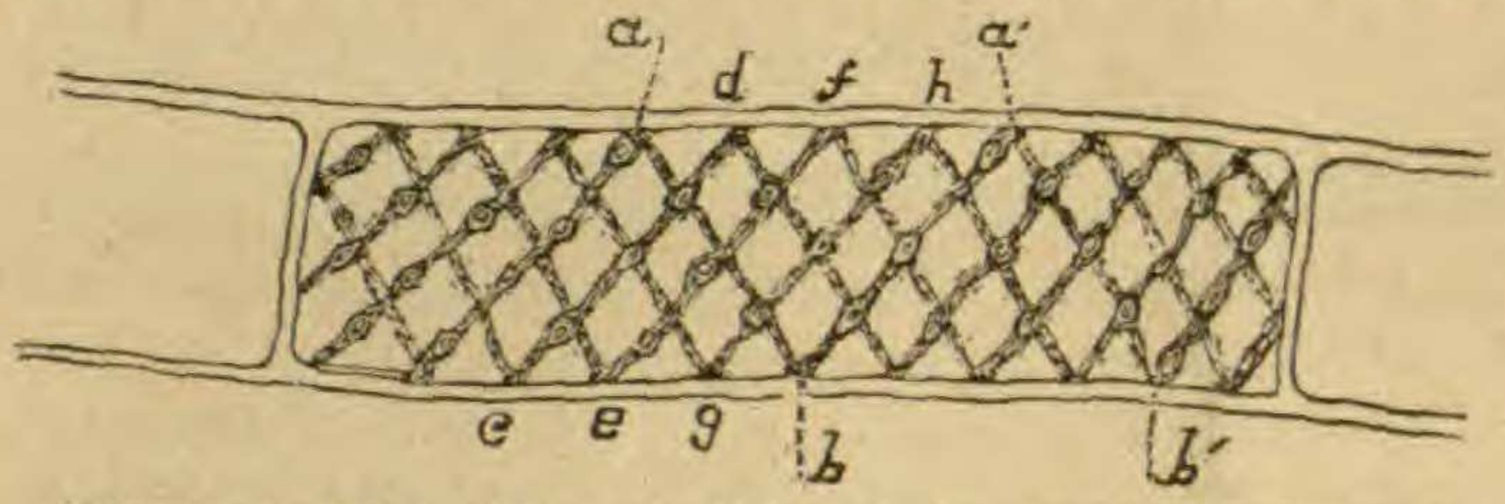

Diagram of the chlorophyll bands in a cell of *Spirogyra*.

Select any band, as *ab*, and focus on its profile, as at *a*. Follow the band to the opposite side of the cell where it is again seen in profile, as at *b*. Fix the points *a* and *b* in memory, focus on the upper surface of the filament and count the number of bands between *a* and *b*, in this case three, *cd*, *ef*, *gh*. This number, increased by one, the one first examined, will be the number of distinct bands in the cell.

C. R. B.

EDITORIAL NOTES

The Philadelphia Academy of Sciences is building up a very fine herbarium, claiming now to possess probably one-half the known species of plants. The growth has been very rapid for some years, the past year showing an addition of 2,868 species. The species are all poisoned, labeled, and systematically arranged, and this great work is being done gratuitously by the persistent labors of Mr. J. H. Redfield, assisted by other botanists.

Dr. T. F. Allen, in the *Torrey Bulletin* for October and November, gives some notes on the American species of *Tolypella*, accompanied by six plates. A key to the species is given and six new species described.

In the December number of the *Gardener's Monthly* is given an abstract of a lecture by Dr. J. T. Rothrock upon "American Forestry." The statement is made that, so far as the lumbering product is concerned, Michigan ranks first, followed by Pennsylvania, Wisconsin, and New York, and far down the list stand Oregon and Washington. If the forests of Pennsylvania are ravaged as in the past, the lecturer estimated that in much less than fifty years they would be stripped, and it is urged that forests should be planted at least as fast as they are cut down.

Prof. C. E. Bessey, in the December *Naturalist*, describes a new species of insect-destroying fungus, under the name *Entomopthora Calopteni*. It occurs as a clay-colored mass in the body cavity and femora of the common locust, *Calopteni differentialis*.

In the American Journal of Science for December, Dr. Gray gives quite an elaborate review of De Candolle's "Nouvelles Remarques sur la Nomenclature Botanique," which for those who either can not read or do not have the original will be a convenient substitute for a translation.

Mr. Thos. Meehan calls attention to the fact that considerable quantities of a sweet liquid are frequently secreted by certain flowers during and after anthesis which are not derived from nectar glands, and do not appear to be associated with means for cross-fertilization.

J. DUVAL-JOUVE, a well-known French botanist, died at Montpellier Aug. 25.

PROF. DR. NICHOLAS ANTON PEDICINO, director of the Botanical Gardens at Rome, died at Naples Aug. 2.

THE COMMISSION sent out by the German government to study the cholera in Egypt was successful in identifying a specific baccillus infesting the lower portion of the small intestine. In size and shape it most closely resembles the bacillus of glanders. That it is the cause of cholera has not been proven, as no animal susceptible to the disease could be found with which to experiment.

THERE WERE NO PAPERS in botany before the National Academy of Sciences held in New Haven, Nov. 13–16.

PROF. DR. LEIMBACH, President of Irmischia, desires to obtain good herbarium specimens of American *Orchidaceæ* in exchange for European specimens. His address is Sondershausen, Germany.

THE HERBARIUM of the late Prof. Alphonso Wood was purchased by the College of Pharmacy of New York City. When overhauled some of the specimens were found to be in a bad condition, and have been destroyed. The others have recently been mounted, and will eventually be systematically arranged.

RECENT INVESTIGATIONS connect the forms known as *Ozonium* with various species of *Lenzites*, *Coprinus* and *Craterellus*; and they are to be regarded as the sclerotium stages of these fungi.

DR. JOSEPH LEIDY, in *Science* for November 30, gives some account of "Crystals in the bark of trees." Botanists are not quite so ignorant of the subject as might be inferred from the article, and reference to Gray's Structural Botany, p. 59, Bessey's Botany, p. 59, Sach's Text Book, p. 64, Prantl and Vines's Botany, p. 36, and a host of other references that might be noted, would indicate that considerable it not "sufficient notice" had been given.

IN A LATE NUMBER of *Botanische Zeitung* Büsgen gives an account of some experiments he has been performing at Strassburg for two seasons in the feeding of *Drosera rotundifolia*. The results confirm the conclusions of Francis Darwin and others, and the plants fed with animal matter through their leaves were stronger and more vigorous in every way than those that were not thus fed but equally favored in every other respect.

MR. BYRON D. HALSTED, in *Science*, describes and figures a "combination walnut," being a nut which is covered partly by a walnut hull and partly by a shellbark hull, as if *Carya* and *Juglans* had been guilty of cross-fertilization. Within the hull it seems that the nut was entirely walnut. The specimen is worth a careful examination.

A RARE CHANCE is offered to botanists to supply themselves with a very desirable plant. Two years ago Prof. F. L. Harvey collected *Dioclea Boykinii* in extreme Southern Arkansas, but not knowing the species was so rare obtained but very few specimens. Next summer he proposes to visit the locality again, and if he can get subscriptions enough to lighten his traveling expenses, he will collect enough for everybody. Subscriptions for specimens should be sent to Prof. F. L. Harvey, Fayetteville, Ark.

THE AMERICAN ASSOCIATION Proceedings for 1882, recently distributed, contain the following botanical papers, printed either in full or by abstract: Palæozoic Floras of Canada, by J. W. Dawson; Flora of N. America, by Asa Gray; Position of the Gamopetalæ, by L. F. Ward; Revision of the Genus Clematis, by Jos. F. James; Achenial Hairs of Compositæ, by G. Macloskie; Action of Frost on Leaf-cells, by C. E. Bessey; Motion of Roots of Corn and Beans, by W. J. Beal; Fertilization of Yucca, by C. V. Riley; Plant-cells and Living Matter, by L. Elsberg; Some Vegetable Poisons, by T. J. Burrill.

PART FOUR of volume 173 of the Phil. Transactions of the Royal Society of London is devoted to a report by Lawes and Gilbert on the botanical results of experiments on the mixed herbage of permanent meadow, conducted for more than twenty years in succession on the same land. It embraces 235 quarto pages with many tables, and is replete with interesting matter.

MR. THOS. MEEHAN, who visited the western coast last summer, dissents in the current signatures of the Proc. Phila. Acad. from the views of Mr. Muir, to be found in the Proc. Am. Assoc., that the Sequoias create by their presence the streams and moisture where they grow, and states that, on the contrary, other kinds of forests are equally good accumulators of moisture, while a moist soil is not essential to the growth and full development of the Sequoias, but adds that the seed, nevertheless, requires for its survival a humid atmosphere till after germination and the thorough establishment of the plantlet. The absence of humid conditions at the present time that may reasonably be inferred to have once existed, sufficiently accounts for the failure of the Sequoias to spread beyond the bounds they have evidently maintained for a long term of years.

MR JOHN MUIR furnishes seven quarto pages of Botanical Notes to the report of the Cruise of the Revenue-Steamer Corwin in 1881, just issued from the government printing office. Lists are given of the flowering plants collected at various localities on the coasts of Alaska, Siberia and adjacent islands.

DR. A. L. CHILD follows his previous paper in the *Pop. Sci. Mo.* (Dec. '82) with another (Dec. '83) on the "Concentric Rings of Trees," in which he repeats the main statements of the former paper and brings additional testimony to show that the concentric rings of trees are not necessarily annual. This evidence (here presented in tabular form) is based upon actual specimens cut from trees of known age.

Specimens furnished by	*Species.*	*Known age, yrs*	*Number of Rings.*
Hon. Robt. W. Furness	Pig hickory	11	16
" " " "	Green ash	8	11
" " " "	Ky. Coffee tree	10	14 main, 21 sub-rings.
" " " "	Bur oak	10	24
" " " "	Black walnut	5	12
" " " "	Chestnut	4	7
" " " "	Peach	8	6
" " " "	Chestnut oak	24	18
Prof. J. L. Budd, Iowa Agr. College.	Spruce (Puget S'd) specimen 12 in. long	15	18 at one end, 12 at the other end.
Mr. H. P. Child, Kansas	Pine	8	19
City Stock Yards.	Soft maple	14	16 main, 47 sub-rings.

The evidence here presented is certainly very strong; strong enough at least to make us drop the term "annual rings" and substitute the more expressive and in many cases more truthful one, *growth rings*.

CURRENT LITERATURE.

Contributions to North American Botany. By Asa Gray. Proc. Am. Acad. 19. pp. 1–96.

As would be expected, the principal part of this contribution is devoted to the *Compositæ*, new species being described and certain genera revised. The following notes were made in looking through the pages, and while they seem desultory they indicate somewhat the order of treatment: